



# PGS Newsletter

<http://www.pittsburghgeologicalsociety.org/>

---

Vol. LXII, No. 5

Robert Burger, Editor

January, 2010

---

**Wednesday, January 20, 2010**  
**Pittsburgh Geological Society**

## **Enigmatic boulder trains, supraglacial rock avalanches, and the origin of “Darwin’s Boulders” – Tierra del Fuego**

by Patrick A. Burkhart

Slippery Rock University, Department of Geography, Geology, and the Environment

Charles Darwin considered himself a geologist and published extensively on many geologic phenomena. He was intrigued with the distribution of erratic boulders and speculated upon their origins. In the *Voyage of the Beagle*, he described crystalline boulders of notable size and abundance near Bahia San Sebastian (BSS), south of the Straits of Magellan, Tierra del Fuego. Influenced by Charles Lyell’s reflections upon slow, vertical movements of crust, submergence, and ice rafting to explain drift, Darwin proposed that the boulders of BSS were ice-rafted. Benefiting from 170 years of subsequent study of the glacial history of Tierra del Fuego, petrography, and terrestrial cosmogenic nuclide measurements, we revisit the origin of “Darwin’s Boulders” at BSS. We suggest that they, as well as another train of boulders to the west at Bahia Inutil, represent rock falls of Beagle-type granite from the Cordillera Darwin onto glacial ice flowing into the Bahia Inutil-Bahia San Sebastian lobe. These supraglacial rock avalanche deposits were subsequently elongated into boulder trains by glacial strain during transport and then deposited upon moraines. The cosmogenic nuclide exposure dates support the correlation of Andean glaciations with the marine oxygen isotope record and the glacial chronologies recently proposed for Tierra del Fuego by others. In addition to the presentation on Darwin’s interpretations of the geology of Tierra del Fuego, conjectures upon what advice Charles Darwin would give to students will be offered. The master’s experiences in higher education, and science, mirror those of many geoscientists. Study of his words and actions, and his overall career, permits powerful inferences into how he might have advised today’s students to engage with the world.

Read the full article for this talk in *GSA Today* at: <ftp://rock.geosociety.org/pub/GSAToday/gt0912.pdf>.

---

**Social hour - 6:00 p.m.**

**Dinner - 7:00 p.m.**

**Program - 8:00 p.m.**

Dinner will cost **\$25.00/person, students \$5.00**; checks preferred. **Reservations should be emailed to Steve McGuire at [smcguire@chesterengineers.com](mailto:smcguire@chesterengineers.com)**, please title as "PGS Dinner Reservation." If you are unable to use email, call (412) 809-6723 and leave your name and number of reservations needed by **noon, Monday, January 18**.

**Meeting will be held at Foster’s Restaurant, Foster Plaza Bldg 10, Green Tree.**

---

---

# Pittsburgh Geological Society

---

## UPDATE ON CEUs FOR PA PGs

The following is an excerpt from an article by Theodore Tesler that appeared in the fourth quarter 2009 newsletter of the Pennsylvania Council of Professional Geologists (PCPG).

The State Registration Board for Professional Engineers, Land Surveyors and Geologists took action at its meeting on November 18, 2009 to confront a lack of information regarding the status of Continuing Education (CE) requirements for the Commonwealth's Professional Engineers, Land Surveyors and Geologists. Under best-case conditions, it is estimated that the development of CE regulations will be complete in mid-2010 and that it will take approximately a full year for governmental review and approval. By voice vote, the Board unanimously approved a definitive statement that no CE hours will be required of our licensees until the beginning of the 2011 renewal cycle. CE hours will be required beginning in October 2011 with the first CE certification required with the 2013 renewal application. The 2013 renewal application will require that licensees certify that they have completed the required CE during the 2011 through 2013 licensing period.

Also, the Board's newsletters are currently posted and archived on the Pennsylvania Bureau of Professional and Occupational Affairs website at [www.dos.state.pa.us/bpoa](http://www.dos.state.pa.us/bpoa).

## COAL INDUSTRY SEMINAR

A seminar entitled "Coal Industry Land Law" will be held at the Radisson Hotel Pittsburgh on January 20, 2010. This one-day program is geared toward attorneys, title professionals, landmen, engineers, surveyors, and geologists. Sessions will be held regarding ownership of mineral rights and surface rights, and easements under PA law; coal ownership; rights to coalbed methane; and competition and conflicts between coal, oil and gas owners. For information call 715-835-5900 or visit [www.halfmoonseminars.com](http://www.halfmoonseminars.com). Cost: \$259 per individual. Pre-registration is recommended. Walk-in registration will be accepted if space is available.

## 8th ANNUAL STUDENT NIGHT CALL FOR ABSTRACTS!

Students are invited to submit abstracts of a Senior Research Project, Senior Design Project, Master's or PhD Thesis for presentation at the Eighth Annual Student Night joint meeting of the Association of Engineering Geologists, the Pittsburgh Geological Society, and the Geotechnical Group of the Pittsburgh Section of the American Society of Civil Engineers.

Abstracts on the following topics are welcome:

- Geology,
- Engineering Geology,
- Petroleum Geology
- Geotechnical Engineering,
- Environmental Engineering,
- Hydrogeology,
- Hydrology

Three students will be selected to give 15-minute oral presentations based on their abstract submittal. Students not selected to give an oral presentation will be invited to present a poster summarizing their research work. **The 3 students selected to give oral presentations will receive monetary awards. The top 3 students who participate in the poster session will also receive awards.** All students who present their research, either verbally or orally, will receive a one-year membership in PGS, a special award certificate, and dinner that evening. Please limit abstracts to a maximum length of 350 words.

The meeting will be held at 6:00 p.m. on Wednesday, April 21, 2010 at Foster's Restaurant, Foster Plaza Bldg. 10, Green Tree, PA. Deadline for submittal of abstracts is Friday, March 5. Notification will be given to selected speakers the following week. For further information, or to submit an abstract, please send an email to Mary Ann Gross at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

## PGS Website of the Month

<http://pleistocenecoalition.com>

## STUDENT WORKSHOP

Submitted by Judy Neelan

It's time again for the *So You Want to be a Geologist* workshop! Sponsored by PGS for six years, it is a student's best source of strategies and knowledge for a future in the working community. Join four professionals for a few hours and learn about careers in geology, academic choices, finding and interviewing for jobs, and desirable professional behaviors. The workshop is tentatively scheduled for late February or early March, the date is yet to be determined. Watch for the announcement and details of the workshop on the PGS website.

## ORIGINS OF WESTERN PA PLACE NAMES

Greene County, Pennsylvania was named for Revolutionary War hero Major General Nathanael Greene, who began the war as a buck private and by the end was one of George Washington's most gifted and dependable officers. Greene County was created on February 9, 1796 from the southern portion of Washington County. The county lends its name to the Permian-age Greene Formation, stratigraphically the highest portion of the Dunkard Group and the youngest Paleozoic strata in the Appalachian basin.

## PETE BRIGGS LIBRARY SALE

Submitted by Judy Neelan

Many thanks to all who contributed to the Pete Briggs Library sale of books last month at PGS. Proceeds collected were donated to Pete's wife, Rita. Pete's maps, the remainder of folios, and selected books will be sold at the January meeting. Proceeds will again go to Rete Briggs. Many thanks to all who contributed!

## DID YOU KNOW . . . ?

- The last time the Earth's atmosphere had as much CO<sub>2</sub> as it does today was about 15 million years ago. Temperatures were significantly higher and sea level was as much as 121 feet higher than today.
- A team of researchers from China and England have discovered and described a new Jurassic pterosaur (flying reptile) that bridges the gap between earlier, longer-tailed species and the later, shorter-tailed ones. It has been named *Darwinopterus* (Darwin's wing) in honor of the great man's 200<sup>th</sup> birthday.

- Geologists from Australia and Illinois discovered 320-million-year-old amber in an Illinois coal seam. The chemistry of the amber, which must have come from a gymnosperm, is similar to that of flowering plants from the Mesozoic and Cenozoic.
- *Tyrannosaurus* may have been bigger than its modern bird relatives, but it appears the monster dinosaur was afflicted by the same kinds of parasites and diseases as our common mourning dove.
- Planetary scientists have located more than 400 new planets outside the Solar System since the search for exoplanets began.
- The Precambrian might have been a time of heightened nuclear threats! It has been speculated that concentrated uranium deposits washed out of continental rocks as the Earth's atmospheric oxygen level increased would have created natural fission reactions that could have had dire consequences for emerging life.
- Scientists have discovered a new form of the metalloid (part metal, part non-metal) element, boron. Called gamma-boron, it is almost as hard as diamond and more heat-resistant than diamond.
- Global warming has more consequences than just raising sea level and changing climate patterns. Melting glaciers are disgorging chemicals such as DDT, captured during 20<sup>th</sup> century snowfalls and stored in the ice, into nearby streams and lakes.
- Pennsylvania isn't the only place in North America where the race to develop shale-gas resources is heating up. Canada has numerous shale deposits that represent a potentially crucial source of increased gas supply.
- Biomarkers are individual organic constituents of sediments, sedimentary rocks, and hydrocarbons that are derived from biological precursors such as algae and bacteria. Biomarkers in hydrocarbons constitute the best evidence that the vast majority of oil and natural gas are biogenic in origin.

---

*If you have news items you would like included in the PGS Newsletter, please send them to Robert Burger at [r.burger@verizon.net](mailto:r.burger@verizon.net).*

---

### PGS Board-of Directors

<b><u>President:</u></b>	Mike Forth	<b><u>Director-at Large:</u></b>	Danielle Deemer	<b><u>Director-at Large:</u></b>	Albert Kollar
<b><u>Vice President:</u></b>	Mary Ann Gross	<b><u>Director-at Large:</u></b>	Maury Deul	<b><u>Counselor:</u></b>	John Harper
<b><u>Treasurer:</u></b>	Steve McGuire	<b><u>Director-at Large:</u></b>	Ray Follador	<b><u>Counselor:</u></b>	Mary Robison
<b><u>Secretary:</u></b>	Erica Love	<b><u>Director-at Large:</u></b>	Bill Gould	<b><u>Counselor:</u></b>	Charles Shultz
<b><u>Past President:</u></b>	Patrick Burkhart	<b><u>Director-at Large:</u></b>	Barbara Hamel		

### Other PGS Positions

<b><u>AAPG Delegate:</u></b>	Dan Billman	<b><u>Webmaster:</u></b>	Mary McGuire	<b><u>Historian:</u></b>	Judy Neelan
<b><u>Newsletter Editor:</u></b>	Robert Burger				

**Memberships:** For information about memberships, please write PGS Membership Chair, PO Box 58172, Pittsburgh PA 15209, call John Harper at (412) 442-4230, or e-mail [jharper@state.pa.us](mailto:jharper@state.pa.us). Membership information may also be found at our website: [www.pittsburghgeologicalsociety.org](http://www.pittsburghgeologicalsociety.org).

**Programs:** If you would like to make a presentation at a PGS meeting, please contact Mary Ann Gross, Program Chair at (412) 721-3499 or email at [magrosspgs1@verizon.net](mailto:magrosspgs1@verizon.net).

**News items:** To submit a news item in the PGS Newsletter, please contact Robert Burger at (412) 818-5659, mail at 1885 Redcoach Road, Allison Park, PA 15101, or email at [r.burger@verizon.net](mailto:r.burger@verizon.net). Be sure to also send an email address and phone number where you may be contacted.

---

## **PGS CORPORATE SPONSORS**

<b>ACA Engineering, Inc.</b>	<b>Hotwell Services, Inc.</b>
<b>Ammonite Resources</b>	<b>Howard Concrete Pumping Company, Inc.</b>
<b>Anschutz Exploration Corp.</b>	<b>The Hutchinson Group, Inc.</b>
<b>ARK Resources, Inc.</b>	<b>Key Environmental, Inc.</b>
<b>The Baron Group, Inc.</b>	<b>Lenape Resources, Inc.</b>
<b>Benedum Interests</b>	<b>Northeastern Energy Consulting, Inc.</b>
<b>Civil &amp; Environmental Consultants, Inc.</b>	<b>Pennsylvania Drilling Co.</b>
<b>CP Environmental Group, Inc.</b>	<b>Pennsylvania Soil and Rock, Inc.</b>
<b>DiGioia, Gray &amp; Associates, LLC</b>	<b>PennVirginia Oil &amp; Gas Corp.</b>
<b>Enviro-Equipment, Inc.</b>	<b>Seneca Resources Corporation</b>
<b>Groundwater &amp; Environmental Services, Inc.</b>	<b>URS Corporation</b>
<b>HDR Engineering, Inc.</b>	<b>Vista Resources, Inc.</b>
<b>Highpointe Oil &amp; Gas, LLC</b>	

PITTSBURGH GEOLOGICAL SOCIETY  
PO Box 58172  
Pittsburgh PA 15209